Homework 6–21-241, Matrices and Linear Transformations

Name: _____
Section: _____

Instructions: Complete the following problems, clearly labeling the problems. Staple this sheet, with your name and section filled in, to the top of your work. Failure to attach this sheet will result in a one point deduction in the grade. The assignment will be graded out of ten points.

DUE: Friday, October 30, 2015

Book Problems

- Section 4.4: 4, 6, 10, 22, 28, 40, 50
- Section 5.1: 8, 10, 20

Other Problems

1. Find a *non-diagonal* matrix with eigenvalues -2, -2, and 3 with corresponding eigenvectors

$$\begin{bmatrix}1\\0\\1\end{bmatrix}, \begin{bmatrix}0\\1\\1\end{bmatrix}, \text{ and } \begin{bmatrix}1\\1\\1\end{bmatrix},$$

   respectively.

2. Let $n \times n$ matrix A be similar to diagonal $n \times n$ matrix D. Show that the trace of A and the trace of D are equal. You may use without proof the fact that for $n \times n$ matrices C and D, $\mathrm{Tr}(CD) = \mathrm{Tr}(DC)$.